USSR

VOLKOVICH, V. L., LAVRINENKO, Ye. P.

"The Problem of Compromise Control in Two-Level Hierarchaical Systems Considering Random Perturbations"

Translation: The selection of a compromise control in a two-level hierarchaical system is studied, considering random perturbations. It is shown that this problem arises in the selection of the probabilities with which limitations are to be fulfilled in subsystems of the first level. The compromise controlls and probabilities are selected on the basis of the method of equivalent trans- forms of the problem of stochastic programming to deterministic form. The algorithm suggested is illustrated by an example.

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USSR

VOLKOVICH, V. L.

"One Algorithm for Ordering of Versions of a Complex Control System on the Basis of the Degree of Performance of the Basic Assignment"

Kibernet. i Vychisl. Tekhn. Resp. Mezhved. Sb. [Cybernetics and Computer Technology. Republic Interdepartmental Collection], 1973, No 19, pp 3-9 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V573, by the author).

Translation: The problem of ordering of a certain set of versions of a complex control system on the basis of the value of the deviation of the output variables of the system from their required values is studied. A rule is suggested for construction of the best version of the system, and an algorithm for ordering of the versions of the set is presented.

1/1   - 67 -

USSR

VOLKOVICH, V. L., GORCHINSKIY, A. P.

"Algorithm for Ordering Versions of a Complex Control System Using Additive Criteria"

Kibernet. i Vychisl. Tekhn. Resp. Mezhved. Sb. [Cybernetics and Computer Equipment. Republic Interdepartmental Collection], 1972, No 15, pp 23-27 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V594, by the authors).

Translation: Methods are studied for systems planning: construction of a set of versions of a complex control system, their evaluation according to various criteria, considered in planning, the ordering of these versions and making of a compromise decision.

1/1

USSR

UDC 577.4

VOLKOVICH, V. L.

"On an Algorithm for Sequencing the Variants of a Complex Control System According to the Degree of Fulfillment of the Principal Task"

Translation: The article considers the problem of sequencing some set of variants of a complex control system according to the amount of deviation of the output variables of the system from the required values. A rule is suggested for constructing the best system variant, as well as an algorithm for sequencing the variants of this set.

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USSR   UDC: 62-506:519.8

VOLKOVICH, V. L. and LAVRINENKO, Ye. P.

"The Problem of Compromise Control in Two-Level Hierarchical
Systems With Random Perturbations Taken Into Account"

Abstract: Since complex control systems with hierarchical struc-
tures usually present research difficulties, the authors propose
a procedure for choosing a compromise control in a two-level hier-
archical system with random perturbations taken into account. The
object of the control is discussed and a statement of the problem
is given. An algorithm for choosing the compromise control is de-
veloped. and is constructed in the form of an iterational proce-
dure. An illustration is given involving a set of aircraft
$S = \{1,\ldots,M\}$ in the control zone, which can be considered as a
subsystem of the first level. The second-level subsystem is the
dispatching service controlling all the aircraft in set S. The
problem is solved in a three-step process.
1/1

Logic & Game Theory

USSR

UDC: 62-501.7:518.9

ABRAMYANTS, T. G., VOLKOVINSKIY, M. I., MASLOV, Ye. P., and
PETROVSKIY, A. M., Moscow

"Tracking Game on a Plane With a Limited Number of Tracking
Trajectory Corrections"

Moscow, Avtomatika i Telemekhanika, No 7, 1972, pp 31-39

Abstract: The purpose of this paper is to analyze a differential
tracking game on a plane for a limited number of tracking tra-
jectory corrections. The game is played by having two partici-
pants, a pursuer and an evader, moving as points on a plane. The
pursuer uses piece-wise programmed control, with shifts from one
control law to another at a particular moment, the number of such
shifts being finite. The trajectory corrections are defined as
the transitions from one program to the other. It is assumed that
the players have simple types of motion, with the velocity of the
pursuer exceeding that of the evader. Solutions for the game are
sought on the basis of a combination of classical calculus of
variations and dynamic programming.

1/1

VOLKOVITSKAYA, Z. I.

UDC 551.556.6

TURBULENT CHARACTERISTICS OF THE ATMOSPHERE AND UTILIZATION OF TURN WHEN CALCULATING DYNAMIC WIND LOADS

Data are presented on the pulsation coefficient of the velocity head in the 300 meter layer of the atmosphere obtained by the intensity profiles of the longitudinal velocity component.

In determining the wind loads on high structures it is necessary to have data on the mean wind velocity and the pulsation of its component. For this purpose, on the high-altitude meteorological tower of the Institute of Experimental Meteorology, synchronous measurements of the pulsations of the longitudinal velocity component were taken approximately every 50 meters along the height of the tower which permitted determination of the turbulent energy profile and the energy intensity for the longitudinal velocity component with different temperature stratification.

This data can be used for calculating the pulsation component of the wind load. At this time, the wind loads are calculated by the static method by the formula [1]

$$q = k B \bar{q},$$ (1)

where k is the dimensionless aerodynamic coefficient,

$B = 1 + m\xi$ is the coefficient of the increase in the velocity head considering the dynamic effect of the wind gusts on the structure,

$m = q/\bar{q}$ is the pulsation coefficient of the velocity head,

ξ is the coefficient of the dynamic nature of the structure,

$\bar{q} = \rho\bar{u}^2/2$ is the normative velocity head.

-100-

VOLKOVITSKAYA, Z. I.

JPRS 55843
4 May 72

ALTITUDE-TIME CORRELATIONS IN THE BOUNDARY LAYER OF THE ATMOSPHERE

UDC 551.551.2

Results are presented from determining the horizontal and vertical scales of turbulence by measurements on the high altitude tower of the Institute of Experimental Meteorology with different temperature stratification. Data are presented on the spatial correlations of the longitudinal velocity component.

In solving a number of applied and scientific problems, the experimental determination of the space-time correlation functions of the wind velocity pulsations at different altitudes in the boundary layer of the atmosphere is of great interest. Determination of the degree of correlation of the velocity pulsations in the atmosphere has important significance, in particular, for calculating the external effects on various objects: separation of the entire altitude of the calculated object into correlated and uncorrelated regions can significantly reduce the values of the possible loads and refine the calcula- tions. For example, this pertains to calculating the dynamic wind loads on high-altitude structures.

The knowledge of the degree of correlation of wind gusts vertically and the dispersion of the velocity component permits an approach to the probability estimate of the wind shears. Actually, inasmuch as in the first approximation the distribution law of the pulsation components of the velocity is close to normal, in determining the probability of an external wind shear it is suffi- cient to know the dispersion and correlation function with respect to alti- tude. Although the dispersions of the wind velocity components are known with the accuracy required in practice for the lower part of the boundary layer, the correlation with respect to altitude has not been studied to the present time. The data presented in this article fill this gap to some degree.

Measurement Procedure

In order to obtain the space-time correlation functions on the high-altitude meteorological tower of the Institute of Experimental Meteorology.

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1/2   015
                              UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--INTENSITY OF TURBULENT ENERGY OF THE WIND SPEED LONGITUDINAL
   COMPONENT IN THE BOUNDARY LAYER OF THE ATMOSPHERE -U-
AUTHOR-(02)-VOLKOVITSKAYA, Z.I., IVANOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--METEOROLOGIYA I GIDROLOGIYA, 1970, NR 6, PP 42-47

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--ATMOSPHERIC STRATIFICATION, PULSATION, METEOROLOGIC TOWER,
   WIND VELOCITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1775
                                        STEP NO--UR/0050/70/000/006/0042/0047
CIRC ACCESSION NO--AP0125391
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0125391   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE DATA OF TURBULETN ENERGY
INTENSITY DEPENDING UPON THE HEIGHT AND THE ATMOSPHERIC STRATIFICATION
ARE GIVEN IN THE ARTICLE.   THESE DATA ARE OBTAINED ON THE BASIS OF THE
RESULTS OF MEASURING THE PULSATIONS OF WIND SPEED AT THE HIGH ALTITUDE
METEOROLOGICAL TOWER OF THE INSTITUTE OF EXPERIMENTAL METEOROLOGY.
     FACILITY: INSTITUT EKSPERIMENTAL'NOY METEOROLOGII.

UNCLASSIFIED

1/2   014
TITLE--CHANGE IN DROP SIZE DISTRIBUTION IN CONDENSATION CHAMBER --U-

UNCLASSIFIED   PROCESSING DATE--09OCT70

AUTHOR-(02)-VOLKOVITSKIY, O.A., LAKTIONOV, A.G.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSR, FIZIKA ATMOSFERY I OKEANA,
    VOL VI, NO 3, 1970, PP 259-264
DATE PUBLISHED------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--DROPLET, FOG, SPECTRUM, METEOROLOGIC CHAMBER, CLOUD CHAMBER,
    CLOUD FORMATION, CONDENSATION REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0717

STEP NO--UR/0362/70/006/003/0259/0264

CIRC ACCESSION NO--AP0110450
                    UNCLASSIFIED

UNCLASSIFIED
PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0110450
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF SOME LAWS OF
TRANSFORMATION OF THE SPECTRUM OF CLOUD DROPLETS DURING SIMULATION OF
THE PROCESS OF CLOUD FORMATION IN A CHAMBER WITH A VOLUME OF 3,200 M
PRIME3. IT WAS EXPERIMENTALLY DEMONSTRATED THAT THE CHANGE IN THE MEAN
CUBIC DIAMETER OF THE DROPLETS CAN BE SATISFACTORILY APPROXIMATED BY THE
DEPENDENCE D SUB3 SIMILAR TO (U SUBZ T-N) PRIMEONE THIRD. IT WAS FOUND
THAT THE DROPLET SPECTRUM OF THE FORMING FOG IS RATHER BROAD. AT THE
ONSET OF FORMATION IT IS CHARACTERIZED BY THE RATIO SIGMA-D SUB1
APPROXIMATELY EQUAL TO 0.74; THEN IT NARROWS GRADUALLY AND BY THE END OF
A 10 MINUTE PERIOD SIGMA-D SUB1 BECOMES EQUAL TO 0.37. NO FURTHER
NARROWING OF THE DROPLET SPECTRUM WAS OBSERVED IN THESE EXPERIMENTS.
THE EVIDENCE PRESENTED IN THIS PAPER INDICATES THAT IN THE CHAMBER THE
CONDENSATION GROWTH OF DROPLETS IS NOT REGULAR SINCE DURING REGULAR
CONDENSATION THERE SHOULD BE A FAR STRONGER NARROWING OF THE DROPLET
SPECTRUM. IT IS POSTULATED THAT THE FACTORS LEADING TO THE FORMATION
OF A RATHER BROAD DROPLET SPECTRUM CAN INCLUDE INHOMOGENEITIES IN THE
SPATIAL DISTRIBUTION OF ACTIVE CONDENSATION NUCLEI, TEMPERATURE
FLUCTUATIONS OR OTHER FACTORS WHICH CAN CAUSE SUPERSATURATION
FLUCTUATIONS IN THE CHAMBER. SUPERSATURATION FLUCTUATIONS EVIDENTLY
CANNOT BE ATTRIBUTED TO TURBULENT MIXING BECAUSE THE COEFFICIENT OF
TURBULENT DIFFUSION IN THE CHAMBER, DETERMINED FROM THE RATE OF
PROPAGATION OF A PASSIVE ADMIXTURE IN THE HORIZONTAL PLANE, IS
APPROXIMATELY FIVE ORDERS OF MAGNITUDE LESS THAN IN THE ATMOSPHERE.
FACILITY: INSTITUTE OF EXPERIMENTAL METEOROLOGY,
INSTITUTE OF APPLIED GEOPHYSICS.   FACILITY:
UNCLASSIFIED

Acc. Nr.: **AP0028773**

PRIMARY SOURCE: Meteorologiya i/Gidrologiya, 1970, Nr 1,
pp 19-29

Ref. Code: UR 0050

AUTHORS: Volkovitskiy, O. A., Sedunov, Yu. S.

ON COMPUTATION OF DROP CONCENTRATION AND MAXIMUM
SUPERSATURATION IN THE INITIAL STAGE OF CLOUD FORMATION

A specified theoretical model for determining main characteristics of the initial
stage of cloud formation is suggested. In the equation of drop growth used in the
computational scheme psychrometric drop temperature, leaps in vapour concentration
and in temperature, at the drop surface as well as the effect of initial sizes of conden-
sation nuclei on the process are taken into account. Comparison of the computations of
drop concentration, performed on the basis of proposed formulas with the data
computed by other authors is made.

REEL/FRAME

19680210

USSR

VOLKOVSKIY, S. A.

UDC: 621.391.8:519.27

"'Phase Differentiation' Method for an Asymmetrical Spectrum"

Tr. Mosk. aviats. in-ta (Transactions of the Moscow Aviation In-stitute) 1970, No. 208, pp 29-36 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A107)

Translation: The estimate of the frequency of a narrow-band normal random process with an asymmetrical spectrum, obtained by computing the number of zeros per unit time, is investigated. An expression is given for the correlation function of the phase derivative of the narrow-band process. The example given is that of comparing the energy spectrum of the phase derivative at zero frequency for a symmetrical spectrum of the form

$$G(\omega) = G(0)e^{-\frac{|\omega - \omega_M|}{\gamma}}$$

and an asymmetrical spectrum of the form

$$G(\omega) = \begin{cases} G_0 e^{-\frac{\omega - \omega_M}{\beta}}, & \text{for } \omega \geq \omega_M \\ 0, & \text{for } \omega < \omega_M \end{cases}$$

USSR

VOLKOVITSKIY, V. R., and LEBEDEV, I. K.

"Remote Displacement Measuring Device"

USSR Authors' Certificate No 356464, Cl. G 01d 5/39, filed 9 Nov 70, published 23 Oct 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 32, 1972, p 108)

Abstract: The device measures the displacement of a moving object, e.g. parts of the human body during catapult ejection. It contains a television camera tube, a video pulse shaper amplifier connected to the tube output, a horizontal scanning generator connected to the deflection system of the tube, a control flip-flop, one of whose inputs is connected to the amplifier output and the other to the horizontal scanning generator, a device counting the number of filling-frequency pulses connected to the control flip-flop, a filling-frequency pulse generator connected to the input of the counter, and a recorder of the counter readings in digital form. To make it possible to measure the relative displacement of two arbitrarily moving points of an object, the device has a vertical scanning generator connected to the tube

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USSR

VOLKOVITSKIY, V. R., and LEBEDEV, I. K., USSR Authors' Certificate No 356464

deflection system, a complementing flip-flop whose input is connected to the amplifier, and a line counter, whose input is connected to the horizontal scanning generator and its control circuit to the complementing flip-flop output. The filling-frequency pulse counter is made reversible, and its counting direction control circuit is connected to the control flip-flop output.

2/2

ALEKSEYEV, G.V., VOLKOVSKIY, S.A., ZHUKOVSKIY, A.P., ONOPRIYENKO, YE.I.,
TROFIMOV, V.D. [Moscow Aviation Institute]

"Experimental Investigations Of The Effective Width Of The Surface Back
Scattering Patterns And The Distribution Of Reflected Signals In The Meter And
Decimeter Range"

Abstract: An account is given of a method of determining back scattering
patterns (BSP) with the aid of the Doppler effect. The special features of the
equipment for processing the signal are shown. Experimental values of the
effective width O_{op} were obtained at wavelengths of 2 m, 68 cm, 34 cm, and 11.3
cm, and for various surfaces (sea, plowed fields, sandy-solonchak terrain
with large crescent-shaped sand dunes, sparse forrest [summer]). The flights
were horizontal at heights from 500--2000 m and at speeds from 200-400 km/hr.
The results of conversion of O_{op} into the angle of slope are close to data ob-
tained by the optical method. The experimentally obtained distribution confirmed
the theoretical concepts concerning the signal structure and made it possible
to determine the level of the mirror components as a function of the radiation
frequency and the type of reflecting surface. It is concluded that experimental
determinations of the effective width of the BSP are feasible in practice on the
base of the Doppler effect with possible modulation of the probing signal.
4 fig. 10 ref.Received by editors,11 Aug 69; after consolidation, 11 Oct 71.

1/1   - 106 -

USSR

UDC 621.371.332.4

ALEKSEYEV, G. V., VOLKOVSKIY, S. A., ZHUKOVSKIY, A. P., OKOPRIYENKO, E. I.,
TROFIMOV, V. D., Moscow Aviation Institute

"Experimental Studies of the Effective Backscattering Pattern Width of Surfaces and the Distribution of Reflected Signals in the Meter and Decimeter Wave Ranges"

Abstract: A study was made of a procedure for determining the backscatter
pattern of a surface using the doppler effect. Results are presented from
experimental studies in the waverange from 11 cm to 2 meters above different
types of surfaces (the sea, plowedfields, forest and sand dunes). Results are
presented also from measuring the ratios of the levels of the reflected and
scattered components of the echo on the basis of the distribution laws obtained.
The possibility of remote determination of the statistical characteristics of
the surface is indicated.

    In practice, experimental determinationsof the effective width of the
backscatter pattern on the basis of the doppler effect considering possible
modulation of the sounding signal are possible. Experimental values of
$\theta_{backscatter}$ [the effective width of the backscatter pattern] are presented in
$1/2$

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USSR

ALEKSEYEV, G. V., et al., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
Vol XV, No 2, 1972, pp 300-210

a broad wave range and for the various mentioned surfaces. The results of
recalculating $\theta_{backscatter}$ in the mean square value of the angle of inclination
$\beta_{mean\ square}$ are close to the data obtained by the optical method. The demon-
strated characteristic nonstationarity of the echo has a significant effect on
the shape of the experimental distributions. The method of synchronous proces-
sing permits consideration of the mentioned characteristic. The experimentally
determined distributions confirmed the theoretical principles of signal struc-
ture and they permitted determination of the level of the reflected component
as a function of the radiation frequency and type of reflecting surface.

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USSR

UDC: 621.396.96:621.391.837.1

VOLKOVSKIY, S. A., TIPUGIN, V. N. (Editors)

"Problems in Analysis of Devices for Self-Contained Radio Control of
Aircraft and Space Vehicles"

Voprosy analiza ustroystv avtonomnogo radioupravleniya letatel'nymi
apparatami. Tr. Mosk. aviats. in-ta, vyp. 208 (cf. English above. Works
of the Moscow Aviation Institute, No 208), Moscow, 90 pp; ill. 58 k. (from
RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G18 K)

Translation: The collection contains eight articles dealing with theo-
retical analysis of radio transmitters in systems for self-contained
control, including problems of studying specific signals. N. S.

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USSR

VOLKOVYSKIY, V. L., ZLOBIN, V. K., KOROLEV, Ye. P.

"The Scale Conversion of Images"

Tr. Ryazan. Radiotekhn. In-ta [Works of Ryazan Institute of Electronic Engineering], 1972, No 36, pp 184-191 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V825 by the authors).

Translation: Problems of continuous scale conversions are studied as associated with output of images from digital computers. Program and apparatus methods of scaling are suggested.

1/1

A/2   007
TITLE--CATALYTIC PURIFICATION OF PHENOL -U-   UNCLASSIFIED   PROCESSING DATE--23OCT70

AUTHOR-(05)-MENYAYLO, A.T., POKROVSKAYA, I.YE., AEROV, M.E., GUROVICH,
R.E., VOLKOYA, T.S.
COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(2), 92-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHENOL, CHEMICAL PURIFICATION, ION EXCHANGE RESIN/(U)KU2 ION
EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0737   STEP NO--UR/0064/70/046/002/0092/0094

CIRC ACCESSION NO--AP0119644
                              UNCLASSIFIED

>2/2   007
CIRC ACCESSION NO--AP0119644
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHENOL (AFTER DISTN. AND DRYING)
WAS PURIFIED BY CONTACT WITH THE KU 2 RESIN (ACTIVATED BY CONTACT WITH
10PERCENT HCL, AND DRIED), AT 75-100DEGREES AND FLOW RATE 1 VOL.-HR TO
QUANT. REMOVE MESITYL OXIDE, ALPHA METHYLSTYRENE, AND ME SUB2 PHCOH
(INITIAL CONCNS. WERE 0.083, 0.0045, AND 0.063 WT. PERCENT, RESP.),
WHILE THE CONCN. OF BZME REMAINED CONST. (0.9 WT. PERCENT).
PURIFICATION BY CONTACT WITH AN ALUMINOSILICATE CATALYST WAS LESS
EFFECTIVE.

PROCESSING DATE--23OCT70

USSR

UDC: 8.74

VOLLERNER, A. N.

"A Specialized Computer"

Tr. Seminara po mat. metodam modelir. i teorii elektr. tsepey. In-t kiber-
net. AN USSR (Works of the Seminar on Methods of Mathematical Modeling and
Electric Circuit Theory. Institute of Cybernetics, Academy of Sciences of
the Ukrainian SSR), 1971, vyp. 9, pp 177-179 (from RZh-Kibernetika, No 4,
Apr 72, Abstract No 4V516)

Translation: A hybrid quasi-analog system for solving boundary value
problems with split boundary conditions is considered. The system in-
cludes a digital automaton and a quasi-analog interconnected by data con-
verters. The quasi-analog contains one integrodifferentiator, a system
of switching and memory elements, and a boundary condition module. The
algorithm of operation of the system is described. Author's abstract.

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USSR

BORKOVSKIY, B. A., VOLLERNER, A. N., KATKOV, A. F., AULIK, M. N., ROMANTSOV, V. P., TYUTIN, A. A.   UDC 681.3

"Modeling Mathematical Machines with Variable Structure"

Modeliruyushchiye Matematicheskiye Mashiny S Peremennoy Strukturoy, [English Version Above], Kiev, Nauk. Dumka Press, 1970, 248 pages, (Translated from Referativnyy Zhurnal Kibernetika, Nc 5, 1971, Abstract No. 5V602 K, unsigned).

Translation: Results are presented from theoretical studies of models with variable structure, designed for modeling of mathematical operations, systems of finite equations and linear differential equations. Significant attention is given to methods of studying models with variable structure and recommenda- tions are given for their engineering planning. The book is designed for engineers, scientific workers and graduate students interested in electronic modeling.

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USSR

VOLLERNER, N.F., LUKOYANOV, B.YE.

UDC 621.391.812.61

"Study Of 'Snow-Storm' Radio Interference In The Arctic"

Kiyev, Izv. VUZ:Radioelektronika, Vol XVI, No 2, Feb 1973, pp 89-97

Abstract: The methods and apparatus for conducting experimental studies of "snow-storm" radio interference are described. On the basis of the material of full-scale studies of "snow-storm" radio interference in the arctic an evaluation is made of a one-dimensional function of the distribution of the field intensity of "snow-storm" radio interference and its statistical characteristics. The following conclusions are based on this study: 1) The effect of "snow-storm" radio interference on signal reception begins to appear with a speed of wind with snow ≥ 7 m/sec; 2) The predominant factor which determines the integral level of "snow-storm" interference is the speed of wind with snow; the effect of temperature and the relative humidity of the air is insignificant; the integral level of "snow-storm" radio noise linearly depends on the speed of wind with snow; 3) Data are obtained on the conditions of "snow-storm" radio interference in the 0.1 ÷ 10 kHz band with various wind speeds; 4) The probability distribution of the integral field intensity of "snow-storm" radio interference agrees approximately with the probability distribution of the values of the

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USSR

VOLLERNER, N.F., et al, Izv. VUZ:Radioelektronika, Vol XVI, No 2, Feb 1973, pp 89-97

speed of wind with snow; 5) Distribution of the amplitude of the "envelope" of "snow-storm" radio interference $c(t_i)$ is satisfactorily close to the normal; the degree of conformity $p(\lambda) = 0.45 - 0.89$; (6) The correlation time of "snow-storm" radio interference in the ~ 6 kHz band equals $(1 \div 2.5) \cdot 10^{-3}$ sec. 9 fig. 2 tab. 8 ref. Received by editors, 27 Apr 1971; after revision, 5 July 1971.

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USSR

UDC 621.371.552

VOLLERNER, N.F., LUKOYANOV, B.YE. (Members Of The Scientific-Technical Society of Radio Engineering, Electronics, And Communication imeni A.S. Popov)

"Distribution Of Slow Multiplicative Fluctuations Of Shortwave Signals In High-Latitude Channels Of Radio Communication"

Abstract: In order to obtain the statistical characteristics of slow fluctuations of shortwave signals, measurements were made of the losses during transmission of signals of known level under natural conditions. The measurements were made in Feb—Aug 1967 with the aid of standard radio equipment on two high-latitude radio channels (longitudinal—length of route $\approx$ 1000 km; and latitudinal—length of route $\approx$ 600 km) at three frequencies: 6.48; 7.56; and 8.7 MHz. Evaluations of the distribution functions of the hourly mean of the losses of a signal during propagation are obtained by statistical processing of material from the experimental investigations. The calculated and experimentally obtained signal losses are compared. 1 fig. 2 tab. 4 ref. Received, 17 March 1971; after further improvement, 5 July 1971.

1/1

- 31 -

Instruments and Measurements

USSR

UDC 621.317.757

VOLLERNER, N. F.

"Some Questions on the Application of Digital Spectrum Analyzers"

Kiev, Izvestiya VUZ--Radioelektronika, vol. 14, No. 7, 1971, pp 743-748

Abstract: In this comparison of the relative advantages of analog and digital spectrum analyzers, the need for averaging the spectral energy density of the random processes over the frequency to reduce the error is indicated. This averaging procedure has two fundamental consequences: the statistical error is reduced with increasing band width, and the error in the estimate of the spectral power is increased due to the nonuniformity of the frequency spectrum for the investigated process within the limits of the pass band. As a result, an optimal filter frequency characteristic at which the total error is a minimum, can be found. The author shows that the parameters of the analyzer can also be optimized by choosing an optimal weight function of the Hemming type. Two of these weight functions are evaluated. As examples of the determination of the spectral density, calculations made on an electronic digital computer are given together with a table of the results.
1/1

USSR   UDC: 621.317.757

VOLLERNER, N. F.

"Problems in Choosing Spectrum Analyzer Selective Circuits"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 11, 1970,
pp 1327-1333

Abstract: An examination is made of the peculiarities and limits
of applicability of spectrum analyzer filters. Although it is re-
alized that the analysis of most of the different types of signal
process involves substantial error, there is a great deal of in-
terest in estimating the possibility and expedience of using
tuned circuits close to ideal for spectrum analyzers. The authors
discuss the real tuned circuit with low attenuation, which is the
closest approach to an ideal one, and find an expression for the
introduced error. This last is found to depend to a large extent
on the form of the signal process, a function of the time, and

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USSR

VOLLERNER, N. F., Izvestiya VUZ—Radioelektronika, Vol 13, No 11, 1970,
pp 1327-1333

the frequency of the signal. It is asserted that spectrum analyzers should
have a number of selective filters with highly rectangular band passes; since
the error in the equipment determination of the spectrum is high, however, the
method of equipment spectral analysis and the concept of the equipment spectrum
must be used. A filter system is recommended for analyzing short aperiodic
pulse signals; its schematic is shown.

2/2

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USSR   UDC 621.372.832.8(088.8)

SHIMKO, A. A., SHAKHGEDANOV, V. N., STOLYAROV, A. K., VOLMAN, V. I.

"Waveguide Y-Circulator"

USSR Author's Certificate No 252428, Filed 17 May 68, Published 12 Feb 70
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B136P)

Translation: The proposed circulator is executed from a symmetrical wave-
guide T-junction in the center of which there is a magnetized ferrite element
perpendicular to the wide wall of the waveguide. The latter is surrounded by
one or several metallic cylinders arranged symmetrically with respect to the
axis of the T-junction on the wide walls of the waveguide. The ferrite ele-
ment together with the metallic cylinders forms a low Q-factor resonator
tuned to the first harmonic of the electric field (the resonator for the
TM_{110} type wave). This field component is amplified and it creates favor-
able conditions for excitation of electromagnetic energy in the open arm
of the circulator. The matching of the input and output channels of the
circulator is improved, and this means the standing wave coefficient is
reduced and the decoupling is increased. The circulators in the 3-cm range
have 25 decibel decoupling, 0.5 decibel losses, a standing wave coefficient
< 1.1 in the frequency band up to 1,000 megahertz. These parameters are
retained in the band on the order of 600 megahertz on variation of the
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USSR

SHIMKO, A. A., et al., USSR Author's Certificate No 252428, Filed 17 May 68,
Published 12 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9B136P)

ambient temperature from -10 to +50° C even when using an ordinary ferrite.
It is noted that the circulator design is simple to manufacture and tune,
and it insures identity of the parameters during series manufacture. There
are three illustrations.

2/2

USSR

UDC 678.5.01:624.074.4.001

VOL'MIR, A. S., and PONOMAREV, A. T., Moscow

"Non-Linear Parametric Oscillations of Cylindrical Shells from Composite Materials"

Riga, Mekhanika Polimerov, No 3, may-Jun 73, pp 531-539

Abstract: The dynamic properties of a tip borne shell made from a composite material were investigated under composite loads using an orthotropic model as the base. Geometrically non-linear dynamic equations of the theory of slanting sheels plotted on the basis of the Kirchhoff-Love hypothesis were used for solving the problem. Different loading conditions were studied: the joint action of a pulsating longitudinal load and a static outer pressure the joint action of a pulsating outer pressure and a static axial compression; the wave processes on the middle surface were disregarded. Calculation results are presented in form of graphs. The applied investigation method can be used to study components of structures made from other types of composite materials. Seven figures, five bibliographic references.

1/1

- 9 -

USSR

VOL'MIR, A. S., PONOMAREV, A. T., and POPYTALOV, S. A., Moscow

"The Behavior of a Wing Panel in a Transitional Mode in a Gas Stream"

Abstract: The subject of study is a rectangular wing moving at a zero angle of attack in an ideally compressible fluid and subject to an instantaneous change in the angle of attack as a result of a vertical gust, causing small, unstable movements of the panel. The procedure applies for air speeds from $M = 0$ to $M = 2$; the example uses $M = \sqrt{2}$. The solution is based on a wave equation of linearized unstable aerodynamics and on geometrically nonlinear equations from the theory of flexible plates. The equations describing the behavior of the elastic system are solved by applying the Bubnov-Galerkin procedure along one coordinate and finite difference methods along the other coordinate and over time. The distribution of aerodynamic pressure on the panel surface is based on the model of a thin bearing surface, using the numerical method of retarded potential from a source, taking the history of the deformation process into account. There are two diagrams and four graphs of numerical results from the example. The method not only permits the determination of the deformation of the median surface and the pressure distributions over time, but makes it possible to find dangerous stresses in the
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..USSR

VOL'MIR, A. S., et al., Moscow, Prikladnaya Matematika i Mekhanika, Vol 37, No 2, Mar - Apr 1973, pp 247 - 253

design in the transition mode and to discover stable oscillations.

2/2

USSR

UDC: 539.377+539,434

VOL'MIR, A. S., PONOMAREV, A. T., Moscow

"Dynamic Stability of Cylindrical Shells During Rapid Heating"

Kiev, Prikladnaya Mekhanika, Vol. 8, No. 1, 1972, pp 3-9

Abstract: The behavior of a closed cylindrical shell, articulated with bearings which are nonmoving in the longitudinal direction and unevenly heated through their thickness is studied under the influence of a rapidly rising thermal load. The nonlinear dynamic equations from the theory of smooth shells are produced, considering the initial irregularities and forces of inertia corresponding to normal displacements; the change in mechanical characteristics of the material as a function of temperature is considered. Calculation relationships are produced using the method of Ritz and integrated by the method of finite differences on the BESM-2M computer. The numerical results are presented as graphs.

1/1

USSR   UDC: 533.6.013.4

VOL'MIR, A. S. and MEDVEDEVA, S. V.

"Investigating the Flutter of Cylindrical Panels in Ultrasonic Gas Flow"

Abstract: This paper is the follow-up to earlier papers on the same subject in which the problem of panel flutter was solved by variation methods with approximation of the curved surface by two terms of a trigonometric series, and the aerodynamic pressure determined from linearized piston theory. In the present paper, the solution to the problem is made more precise through the use of nonlinear shell theory and the method of finite differences, thus making it possible to follow the behavior of the panel with respect to time. The authors begin by considering a circular cylindrical hinge-supported panel loaded by static compressing stresses of a specified intensity and surrounded by an ultrasonic gas stream along the generatrix, and present the initial nonlinear equations describing the panel behavior. The aerodynamic pressure factor in these equations is determined from refined piston theory with corrections for the panel curvature considered. Structural and
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USSR

UDC: 533.6.013.42

VOL'MIR, A. S., et al, <u>Doklady Akademii nauk SSSR</u>, vol 207, No 4, 1972, pp 811-813

aerodynamic damping factors are also taken into account. Curves are plotted for the frequency of steady-state nonlinear flutter oscillations as functions of the Mach number and the compressing stress factor.

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- 9 -

USSR

UDC 539.371

VOL'MIR, Ye. A.

"Behavior of Circular Cylindrical Panels Under the Influence of Axial Dynamic Compression"

Abstract: The dynamic buckling of open, reinforced cylindrical shells has been studied in only one earlier work known to the author, in which one particular example was presented. The present article studies this problem in more general form. A smooth, circular cylindrical panel is studied, articulated on the edges, on the assumption that it is subjected to dynamic compression along the genetratrix. Considering the rate of mutual displacement of the edges of the panel to be low in comparison to the speed of sound in the panel material, the author considers only the component of forces of inertia corresponding to normal bending of the panel. The algorithm presented allows the behavior of circular cylindrical panels under the influence of axial pulse loads of widely varied nature to be studied from the standpoint of the nonlinear theory of shells, and allows the limiting values of "safe" impulses to be established in correspondence with the criterion selected.

1/1

USSR

UDC 539.14.144.3

PEKER, L. K., VOLMYANSKIY, E. I., VORONKOV, Yu. P., KAZAKOV, A. L.

"Concerning the Causes of Lowering of the Levels $s_{\frac{1}{2}}$ and $d_{\frac{3}{2}}$, Caused by Holes in Filled Shells"

Abstract: Since, according to results of recent research, lowering of the hole level in light nuclei is linked to a large amount of particle-hole interaction, an attempt is made to ascertain the role of such interaction in lowering of the hole levels in heavy nuclei. It is found that whereas in light nuclei the effect of lowering of the hole levels is determined by particle-hole interaction, in heavy nuclei it is determined by the effect of rearrangement of the nuclon shells. The possible causes of the decrease of particle-hole interaction in heavy nuclei are enumerated. An important cause of the weakening of particle-hole interaction in heavy nuclei is the fact that in such nuclei the particle-hole interaction is reduced to an interaction of the p -- p type, whereas in light nuclei an important part is played by interactions of the n -- p type. 1 table, 7 bibliographic entries.

1/1

1/2   027

UNCLASSIFIED   PROCESSING DATE--18SEP70

TITLE--DETERMINATION OF TRACE IMPURITIES OF HEAVY METALS ARISING DURING THE ELECTROLYSIS OF SODIUM CHLORIDE WITH A MERCURY CATHODE -U-

AUTHOR-(04)-DEMYANCHUK, A.S., MIKHAYLOV, V.S., VOLNITSKIY, G.P., SIRENKO, I.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTRSOK, 1970, 12(1) 129-30

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTROLYSIS, SODIUM CHLORIDE, AMALGAM, METAL ELECTRODE, CATHODE, MERCURY, CHEMICAL PURITY, ALUMINUM, VANADIUM, IRON, CHROMIUM, LEAD, MANGANESE, COPPER/(U)ISP28 SPECTROGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/0928   STEP NO--UR/0368/70/012/001/0129/0130

CIRC ACCESSION NO--AP0053852

UNCLASSIFIED

2/2   027   UNCLASSIFIED   PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0053852
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TRACES OF AL, V, FE, CR, PB, MN,
   CU, AND NI (10 PRIME NEGATIVE3 MINUS 10 PRIME NEGATIVE7 PERCENT) IN
   SOLID AND LIQUID AMALGAMS, NAOH SOLN., AND IN GRAPHITE ARE DETD. BY
   SPECTROGRAPHY. AN ISP-28 SPECTROGRAPH, WITH A 17-18-A A.C. ARC AND 1
   MIN EXPOSURE WAS USED. THE ANAL. LINES ARE AL I 3082.2, V I 3185.4, FE
   II 2599.4, CR II 2835.6, PB I 2833.1, MN I 2801.1, CU I 3274.0, AND NI
   I 3050.0 ANGSTROM. THIS METHOD WAS USED FOR DETG. THE SOURCES OF THESE
   IMPURITIES IN THE INDUSTRIAL ELECTROLYSIS OF NACL WITH A HG CATHODE.
   THE RELATIVE STD. DEVIATION WAS LESS THAN 20PERCENT.

UNCLASSIFIED

1/2   023

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--FORMATION OF MAGNESIUM SUPEROXIDE MG(O SUB2) SUB2 DURING THE REACTION OF MAGNESIUM PEROXIDE WITH OZONE -U-

AUTHOR-(04)-VOLNOV, I.I., TOKAREVA, S.A., BELEVSKIY, V.N., LATYSHEVA, YE.I.

COUNTRY OF INFO--USSR

SOURCE--IZV AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 513-16

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MAGNESIUM OXIDE, PEROXIDE, OZONE, LOW TEMPERATURE EFFECT, EPR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1549

STEP NO--UR/0062/70/000/003/0513/0516

CIRC ACCESSION NO--AP0125175

UNCLASSIFIED

2/2   023
CIRC ACCESSION NO--AP0125175   UNCLASSIFIED   PROCESSING DATE--13NOV70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. MG PEROXIDES, PREPD. FROM MG(OH)
SUB2 AND H SUB2 O SUB2 CONTG. SIMILAR TO 39PERCENT MGO SUB2, WERE
OZONIZED IN SUSPENSION IN FREON-12 AT MINUS 100DEGREES. THE SOLN.
TURNED BLUE WHEN O SUB3-O SUB2 WAS INTRODUCED; ADDN. OF THE MGO SUB2
SPECIMENT AT MINUS 100DEGREES FOLLOWED BY 1 HR HOLD AND WARNING TO MINUS
85DEGREES TO MINUS 65DEGREES, WHICH WAS THE OPTIMUM INTERVAL, RESULTED,
AFTER MECH. TRANSFER OF THE SOLID PRODUCT, IN ISOLATION OF RATHER
UNSTABLE (AT ROOM TEMP.) OZONIATION PRODUCTS. THESE CONTAINED SMALLER
THAN OR EQUAL TO 60PERCENT MG(O SUB2) SUB2. THE INDIVIDUALITY OF THIS
COMPN. WAS CONFIRMED BY EPR SPECTRUM. THERMAL ANAL. SHOWED THAT THE
COMPD. IS STABLE UP TO ABOUT MINUS 29DEGREES TO MINUS 35DEGREES.
FACILITY: INST. OBSHCH. NEORG. KHIM. IM. KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   013   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MAGNESIUM CHLORIDE HYDROGEN PEROXIDE WATER, MAGNESIUM SULFATE
   HYDROGEN PEROXIDE WATER,, MAGNESIUM NITRATE HYDROGEN PEROXIDE WATER, AND
AUTHOR-(02)-VOLNOV, I.I., LATYSHEVA, YE.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 552-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SOLUBILITY, MAGNESIUM CHLORIDE, HYDROGEN PEROXIDE, AQUEOUS
   SOLUTION, MAGNESIUM SULFATE, MAGNESIUM NITRATE, AMMONIUM CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1721   STEP NO--UR/0078/70/015/002/0552/0558

CIRC ACCESSION NO--AP0115550
                    UNCLASSIFIED

2/2   013   UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0115550
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STUDY WAS MADE TO DEVELOP A
  METHOD FOR PREPG. MG PEROXIDE. ISOTHERMAL (20DEGREES) SOLY. DIAGRAMS OF
  MGX-H SUB2-O SUB2-H SUB2 O (X EQUALS CL SUB2, SO SUB4, OR (NO SUB3)SUB2)
  AND OF NH SUB4 CL-H SUB2 O SUB2-H SUB2 O SYSTEMS ARE CONSTRUCTED.   AT
  THE EXPTL. TEMP., MOL. ADDUCTS OF H SUB2 O SUB2 TO THE CORRESPONDING
  SALTS DID NOT FORM.

UNCLASSIFIED

TITLE--X RAY DIFFRACTION STUDY OF MAGNESIUM SUPEROXIDE MG (O SUB2) SUB2
-U-

AUTHOR-(04)-BAKULINA, V.M., TOKAREVA, S.A., LATYSHEVA, YE.I., VOLNOV, I.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 158-9

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--X RAY DIFFRACTION ANALYSIS, SUPEROXIDE, MAGNESIUM COMPOUND,
  MAGNESIUM OXIDE, MAGNESIUM CARBONATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0782   STEP NO--UR/0192/70/011/001/0158/0159

CIRC ACCESSION NO--AP0104228
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0104228
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SAMPLES OF OZONIZED MGO SUB2
CONTG. 60PERCENT MG(O SUB2) SUB2, 20PERCENT MG(OH) SUB2, 10PERCENT MGO
SUB2, AND 4-5PERCENT MGCO SUB3 WERE EXAMD. BY POWDER, PHOTOGRAPHIC
METHOD (CAMERA DIAM. 86 MM, CU KALPHA) AT LIQ. N TEMP. THE LINES
CORRESPONDING TO MG(O SUB2) SUB2 (C-A EQUALS 1.1, A EQUALS 11.44
ANGSTROMS), MG(OH) SUB2, AND MGO SUB2 WERE FOUND. THE LINES
CORRESPONDING TO MGCO SUB3 WERE NOT VISIBLE.

UNCLASSIFIED

TITLE--THERMAL STABILITY OF MAGNESIUM PEROXIDE -U-

AUTHOR-(02)-VOLNOV, I.I., LATYSHEVA, YE.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1) 13-18

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL STABILITY, PEROXIDE, MAGNESIUM COMPOUND, HYDROXIDE,
   CHEMICAL DECOMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0587   STEP NO--UR/0062/70/000/001/0013/0018

CIRC ACCESSION NO--AP0105570
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0105570
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MGO SUB2 TIMES H SUB2 O AND
 ANALOGS WITH VARYING CONTENTS OF H SUB2 O, AS WELL AS HYDRATES OF MG(OH)
 SUB2 WERE STUDIED THERMOGRAPHICALLY. SPECIMENS WITH UP TO 75PERCENT MGO
 SUB2 WERE INCLUDED. AT 110DEGREES THESE YIELD THE MAIN BULK OF H SUB2 O
 ADSORBED FROM THE MOTHER LIQUOR AND MGO SUB2 UNDERGOES A PARTIAL
 DECOMPN. WITH LOSS OF O AND FORMATION OF MG(OH) SUB2. THE RESULTING
 MIXT. OF MGO SUB2 AND MG(OH) SUB2 DECOMPS. EXOTHERMALLY AT 360 TO
 75DEGREES WITH LOSS OF O AND FORMATION OF MGO. THE EXOTHERM IS CAUSED
 BY A COMBINATION OF THE REACTIONS: MGO SUB2 PLUS 2H SUB2 O YIELDS
 MG(OH) SUB2 PLUS H SUB2 O SUB2 AND H SUB2 O SUB2 YIELDS H SUB2 O PLUS
 0.50 SUB2.

UNCLASSIFIED

USSR

UDC 537.521

BASOV, N. G., Academician, BELENOV, E. M., VOL'NOV, M. I., GUBIN, M. A., DANILEYKO, M. V., and NIKITIN, V. V., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR, Moscow

"On the Question of Generating a Stabilized, Ring-Resonator Laser Frequency"

Abstract: The power resonances of a ring laser can be considerably narrower and more contrasting than in the case of a linear laser. They are based on more complex effects, and the coincidence of the center of the resonances with the central absorption frequency is not obvious. The article studies this question theoretically and experimentally. It is shown that, as in the case of a linear laser, the power resonances of a ring laser occur at the central frequency of the absorbing gas.

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USSR

ALEKSEYEV, V. A.; BASOV, N. G., Academician; BELENOV, E. M.;
DANILEYKO, M. V.; VOL'NOV, M. I.; GUBIN, M. A.; NIKITIN, V. V.;
TROSHAGIN, V. N.; P. N. Lebedev Physics Institute, Moscow

UDC 537.521

"Spectroscopy Inside a Uniform (Radiation) Line"

Abstract: A method is proposed and realized for finding the shift, 2Δ, between the spectral components of a line in the radiation of atoms or molecules, and in such cases when the 2Δ value is much less than the uniform or radiation width. The method is based on the concurrence of spatial and frequency attenuation effects of the medium in a ring laser. The dependence of the qualitatively different oscillation modes of the laser on the frequency difference Δ permits recording the presence of the Doppler broadening of the line for Δ by an amount much less than for the uniform width. It is found that, from the viewpoint of the accepted criterion of spectral line resolution, the sensitivity of the proposed method can be multiplied by $10^2 - 10^4$ times. The theory of the method is developed, and an experiment for resolving the fine

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USSR

ALEKSEYEV, V. A., et al, Doklady Akademii Nauk SSSR, vol 207, No 6, 1972, pp 1306-1307

structure of the line, conducted with a laser containing a mixture of Ne^{20} and Ne^{22}, is described.

2/2

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USSR

UDC 548.0:226.33

VOLNYANSKIY, M. D., KUDZIN, A. YU., SUKHINSKIY, A. N. , Dnepropetrousk State University

"Relaxation of Phase Boundaries in SbSI Single Crystals"

Moscow, Kristallografiya, Vol 18, No 2, Mar-Apr 73, pp 325-327.

Abstract: Changes in dielectric permeability with time ($\Delta\varepsilon_{max} = f(t)$) are studied when a constant electric field acts on SbSI single crystals in the region of the phase transition. It is established that $\Delta\varepsilon_{max}$ approaches saturation with increasing field intensity and decreases by several times as frequency is varied from 1 to 40 KHz. The decrease time of ε is reduced by 4 to 6 times when the specimen is illuminated and increases with increasing frequency. The dependences produced can be explained by the contribution to the value of ε of newly developing phase boundaries, the attachment time of which amounts to some tens of seconds.

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USSR

UDC: 621.3.083.8:531/768

BYKOV, V. A., VOLKOV, L. N., VOLNYANSKIY, V. N., KISHCHENKOV, O. V., SARINGULYAN, Ye. Kh., FILATOV, V. M.

"A Digital Accelerometer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 31, Nov 71, Author's Certificate No 317977, Division G, filed 26 Feb 70, published 19 Oct 71, p 167

Translation: This Author's Certificate introduces a digital accelerometer which contains a sensing element with moment and position pickups, and an amplifier with its input connected to the position pickup, while the output is connected to the moment pickup through a series circuit comprised of a pulse-duration modulator and a feedback pulse shaper. The device also contains a pulse generator connected through a switch to a counter. As a distinguishing feature of the patent, accuracy is improved by including a comparison unit connected to the amplifier output, and a control unit whose output is connected to the controlling input of the switch. One input of the control unit is connected to the output of the comparison unit, and the other is connected to the modulator output.

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1/2   015   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--REACTION OF PHOSPHORUS PENTACHLORIDE WITH TETRAHYDROFURAN -U-

AUTHOR-(03)-FRIDLAND, S.V., KAMAY, G., VOLOBOYEVA, L.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 595-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHORUS CHLORIDE, FURAN, ANILINE, ORGANIC PHOSPHORUS
  COMPOUND, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0934   STEP NO--UR/0079/70/040/003/0595/0597

CIRC ACCESSION NO--AP0124594
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0124594
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THIS ABSTR., R EQUALS 2,
3-DIHYDRO-4-FURYL. TO 50 G THF IN 250 ML C SUB6 H SUB6 WAS SLOWLY ADDED
433 G PCL SUB5 AT 5-10DEGREES, AND THE MIXT. KEPT OVERNIGHT AND TREATED
WITH DRY SO SUB2 TO GIVE 77PERCENT 2,3-DIHYDRO-4-FURYLPHOSPHONIC
DICHLORIDE, M. 50-1DEGREES, B SUB7 112DEGREES, WHICH WITH MEOH AND
PYRIDINE GAVE RP(O)(OME) SUB2 54PERCENT, B SUB9 128-30DEGREES, D PRIME20
1.2313, N PRIME20 SUBD 1.4686; DI-ET ESTER, 49PERCENT, B SUB10
133-5DEGREES, 1.1431, 1.4612; DI-PR ESTER, 55.6PERCENT, B SUB9
151-3DEGREES, 1.0922, 1.4591; DIISO-BU ESTER 53DEGREES, 4PERCENT, B SUB3
157-8DEGREES 1.0504, 1.4576; DI-BU ESTER, 49.8PERCENT, B SUB5
155-7DEGREES, 1.0572, 1.4588; DIISOAMYL ESTER, 55.5PERCENT, B SUB9
179-91DEGREES, 1.0264, 1.4581; DIAMYL ESTER, B SUB5 170-1DEGREES,
1.0271, 1.4579. WHEN RPOCL SUB2 WAS HYDROLYZED AND THE RESULTING CRUDE
ACID SOLN. TREATED WITH PHNH SUB2, IT GAVE THE MONOANILINE SALT, M.
108-9DEGREES. THF REACTS WITH 3 MOLES PCL SUB5 TO YIELD RPOCL SUB2
ABOVE, POCL SUB3, 2SOCL SUB2, AND 3 HCL, AFTER TREATMENT OF THE MIXT.
WITH SO SUB2 AS INDICATED. THE INITIAL REACTION MUST BE RUN WITH VERY
EFFECTIVE COOLING AND REQUIRES UP TO 2 DAYS FOR ELIMINATION OF HCL AT
ROOM TEMP.   FACILITY: KAZAN. KHIM.-TECHNOL. INST. IM. KIROVA,
KAZAN, USSR.

UNCLASSIFIED

USSR   •   UDC: 533.69.01+533.662.013

VOLOBUIEV, A. N., FAKTOROVIN, I. O.

"Investigation of Conditions of Stoppage of a Lifting Rotor With Hinged
Vanes in Horizontal Flight"

Translation: The paper outlines the procedure and the principal results
of mathematical modeling on an analog computer to simulate flywheel motion
in the thrust plane of an absolutely rigid blade of the lifting rotor of a
helicopter fastened in a horizontal hinge by means of an elastic element.
An investigation was made into safe conditions for reducing the angular
velocity of rotation of the lifting rotor to 1 rad/s; at the same time, a
parametric estimate was made of the way that flywheel motion of the blade
is affected by the angle of attack and overall pitch of the rotor, the mass
characteristics of the blade, the velocity of horizontal flight of the heli-
copter, and the rigidity of the horizontal hinge. The aerodynamic load of
the blade was determined on the basis of the classical theory of a lifting

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USSR

rotor, disregarding the effect of inductive velocity, flow compressibility,
detachment and unsteady flow, but accounting for the region of inverse flow
around the blade as the most telling factor. It is shown on the basis of
the results of the modeling that the most advisable method for stopping a
lifting rotor in flight is mechanical jamming of the horizontal hinges of
the vanes when a certain recommended angular velocity is reached. A. M.
Volodko.

2/2

69131x   Use of lead isotopes for metallogenic analysis of the sources of ore-forming substances.   Volobuev, M. I.; Zykov, S. I.; Stupnikova, N. I. (Moscow State Univ., Moscow, USSR). Geokhimiya 1970, (1), 22-34 (Russ).   By taking into account the geol. situation and data on a comparative characteristics of the isotopic compn. of S of ore occurrences and of Pb dispersed in country rocks, it proved possible to single out sources of ore-forming matters of polymetallic deposits.   With the 1st source of ore-forming matters (granitic rocks) the formation of deposits and ore shows of the Enisei Mountain Ridge of the eastern Sayany and the Kuznetsk Alatau is connected.   At the expense of the 2nd source (i.e. mobilization of dispersed Pb from country rocks) polymetallic deposits and ore shows of Tuva were formed.   Ore shows connected with the migration of Pb from radioactive minerals (3rd group of sources) are rarely met.   BLJR

USSR

UDC 523.165

VOLOBUYEV, S. A., GAL'PER, A. M., KIRILLOV-UGRYUMOV, V. G., LUCHKOV, B. I., OZEROV, YU. V.

"Observation of Gamma-Ray Quanta With an Energy Over 100 Mev From the Region of the Crab Nebula"

Abstract: The Cosmos-251, Cosmos-264, and Cosmos-280 artificial earth satellites had a device to record gamma-ray quanta with energies $E_\gamma \gtrsim 100$ Mev. The device was a gamma-ray telescope consisting of two scintillation counters and one directional Cerenkov counter with a lead converter. In flights 1 and 3 the viewing angle of the device took in the galactic plane. In flight 1 the device viewed the region of space where the Crab Nebula is found. A detailed analysis of the flight 1 data, consisting in a study of the initial, intermediate, and final orbit results, showed that excessive gamma radiation emanates from the region bounded by the coordinates $\delta = 0 + 13°$, $\alpha = 3.6 + 5^h$,

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USSR

VOLOBUYEV, S. A. et al, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 12, Dec 71, pp 2463-2465

which includes neither the Crab Nebula nor the galactic plane. The excessive flux from this region is 2.0 ± 0.6 per interval. It is suggested that this flux is due to a point source in the region of the constellation Taurus rather than a line source in the galactic plane.

2/2

1/2   03C   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--STUDY CF PRIMARY GAMMA RAYS OF ENERGIES HIGHER THAN 100 MEV BY
   MEANS OF A SATELLITE CARRIED SPARK CHAMBER -U-
AUTHOR-(05)-VOLOBUEV, S.A., GALPER, A.M., KIRILLOVUGRIUMOV, V.G., LUCHKOV,
   B.I., CZERGV, I.V.
COUNTRY OF INFO--USSR, HUNGARY

SOURCE--INTERNATICNAL CONFERENCE ON COSMIC RAYS, 11TH, BUDAPEST, HUNGARY,
   AUGUST 25-SEPTEMBER 4, 1969, PROCEEDINGS. VOLUME 1 ORIGIN AND GALACTIC
DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--GAMMA RAY, SPARK CHAMBER, SPACECRAFT CARRIED EQUIPMENT,
   ARTIFICIAL EARTH SATELLITE/(U)COSMOS 264 SATELLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605061/006 STEP NO--HU/2506/70/029/000/0127/0129

CIRC ACCESSION NO--AT0144431
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0144431
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IDENTIFICATION OF EVENTS
  CORRESPONDING TO GAMMA RAY REGISTRATION AND ASSEMENT OF THE GAMMA RAY
  FLUX USING A DVEICE WITH A MULTIPLATE WIDE GAP SPARK CHABER. AN ATTEMPT
  HAS BEEN MADE TO ISOLATE GALACTIC GAMMA RAY FLUX. THE INSTRUMENT WAS
  MOUNTED ON THE SATELLITE COSMOS 264. MORE THAN 100,000 STEREOPHOTOS
  WERE TAKEN OF EVENTS IN THE SPARK CHAMBER.   FACILITY: MOSKOVSKII
  INZHENERNO-FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC: 581.1

VOLOBUYEV, V.R., Institute of Soil Science and Agrochemistry, Academy of
Sciences, Azerbaydzan SSR, Baku

"Variation in Productivity of Vegetation in Connection with Hydrothermal
Conditions"

Abstract: The dependence of energy consumption connected with soil formation
(Q) on the radiation balance of the earth's surface R and relative humidity K
is expressed by the equation $Q = Re^{\frac{-1}{mK}}$ where m is the m. biological activity
of the biogeocenosis. New data on the productivity of a series of bio-
geocenoses has recently been reported. A definite connection has also been
established between the possible energy expenditures connected with soil
formation (Q) and the amount of yearly increment of the plant mass (v) de-
scribed by the formula: $v = Q^n$, where n is related to (K) above and
represents the influence of humidity on the productivity of plant associations.

1/1

USSR   UDC 621.983.044.7

MAZUROVSKIY, B. YA., YUSHANTSEVA, T. V., and VOLOCHINSKAYA, L. M.,

"Effect of Pulse Loads on the Properties of Al-Mg Alloys"

Moscow, Kuznechno-Shtampovochnoye Proizvodstvo, No 7, Jul 71, pp 19-21

Abstract: Investigations were conducted at the Electrohydraulics Planning
and Design Bureau on the effect of pulse loads on the mechanical properties
and structure of deformed AMg6 Al-Mg alloy. The following conclusions were
made as a result of the study.
        On stamped bilges two zones of maximum deformation were revealed: in
the center and at the flange edge. Hardness of AMg6BM and AMg6BN alloys increases
with increased deformation. The zones of greatest deformation for AMg6M alloy
are the zones of maximum strengthening in which tensile and yield strengths
are increased and relative elongation is reduced. In alloy AMg6BN in the
zones of greatest thinning, tensile and yield strengths are decreased and
relative elongation is increased in comparison with the initial values.
Maximum increase of hardness, and of tensile and yield strengths and maximum
lowering of elongation was produced in a thin-sheet bilge (s = 3 mm). In
AMg6BM alloy a more intensive growth in observed, after stamping, for yield
strength than for tensile strength and a sharp lowering of elongation is
1/2

USSR

MAZUROVSKIY, B. YA., et al., Kuznechno-Shtampovochnoye Proizvodstvo, No 7, Jul 71, pp 19-21

observed in comparison with initial values. Bilges stamped by the electro-hydraulic method without annealing have mechanical properties satisfying specified requirements. Changes in microstructure and surface defects were not detected on stamped bilges. The electrohydraulic method of stamping bilges and similar parts of Al-Mg alloys was recommended for industrial usuage. Four figures, one table, four bibliographic references.

2/2

UCSR   UDC 616.921.5-036.22(470.51)"1966-'967"   6

AKSENOV, V. A., ORLOVA, N. N., SELIDOVKIN, D. A., AKSENOV, L. A.,
ZORIN, V. S., VOLOCHKOV, A. D., GLADINA, YE. B., SAMUSEV, N. F.,
ZAKSTEL'SKAYA, L. YA., and YEVSTIGNEYEVA, N. N., Institute of Virology
imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Ministry
of Health USSR

"Some Features of the 1966-1967 Influenza Epidemic in Glazov"

Abstract: This epidemic occurred in two waves: the first i. Nov-
ember-December, 1966, when few cases of influenza or other acute
respiratory diseases were reported in most of the USSR and localities
adjacent to Glazov, and the second in February, 1967. The first
wave affected mostly young children, while the second wave affected
children and adults to almost the same degree, 10.6 and 9.8 per 100
persons. The course of the disease was severe among children, but
relatively mild among adults. The high incidence of influenza in
the first wave, characteristic dynamics of the curve with a sharp
rise, quick attainment of a peak, and sharp drop, as well as the
results of serological examinations, implicated the A_2 virus as the
1/2

USSR

AKSENOV, V. A., et al., Moscow, Voprosy Virusologii, No 1, 1970, pp 97-101

causative agent. The second wave was attributed to the B virus. A peculiar virus - an atypical A_1 strain with altered antigenic structure - was also isolated during the epidemic. However, the absence of antibodies in both children and adults indicated that it did not play an etiological role in the outbreak.

2/2

USSR

UDC 581.192.08

VOLODARSKIY, A. D.

"Immunochemical Analysis of the Antigenic Structure of Plant Tissues"

Moscow, Biofizicheskiye Metody v Fiziologii Rasteniy, Nauka, 1971, pp 14-33

Translation of Russian Abstract: The article presents the basic principles
of immunochemical analysis and is application to plant samples. An outline
of the differential investigation of the antigenic structure of plant tissues
is given. Methodological approaches are described explaining how immuno-
chemical methods can be used to perform analytical investigations of the
antigenic structure of plant cells during the process of rearrangement of
their metabolism. An outline of immunizing rabbits and the technique
of obtaining monospecific antibodies to individual antigens are described.

1/1

1/2   042   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--BEHAVIOR OF MICROCOMPONENTS OF THE MINERAL PART OF COALS DURING
   COMBUSTION -U-

AUTHOR--GREKHOV, I.T., SHPIRT, M.YA., VOLODARSKIY, I.KH.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TVERD. TOPL. 1970, (1), 157-9

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--COAL, COMBUSTION R AND D, COMBUSTION PRODUCT, CHEMICAL
   COMPOSITION, SILICON OXIDE, SODIUM CARBONATE, CALCIUM OXIDE, GERMANIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/2032   STEP NO--UR/0467/70/000/001/0157/0159

CIRC ACCESSION NO--AP0109964
ZZZZZZZZZZZZZ   UNCLASSIFIED

2/2   042   UNCLASSIFIED   PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0109964
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STATISTICAL ANAL. OF EXPTL. DATA
    DISCLOSED THAT THE ASH CONTENT A IN BROWN COALS IN THE RANGE
    8.2-28.6PERCENT HAD NO EFFECT ON THE DISTRIBUTION OF GE BETWEEN THE SLAG
    AND THE VOLATILE ASH OR ON THE RATIO K OF THE GE CONCN. IN THE SLAG TO
    THE CONCN. IN THE INITIAL ASH, WHEN COAL WAS BURNED IN OVENS FOR THE
    POWDER LIKE FUEL. IN THE STATIONARY BED FLAME OVENS K WAS INDEPENDENT
    OF A FOR A LESS THAN 32PERCENT; WITH A GREATER THAN 32PERCENT, K
    INCREASED. A PILOT FLAME OVEN FOR THE EXPTS. IN THE STATIONARY FUEL BED
    WAS USED. THE SCHEME AND THE OVEN ARE DESCRIBED. WITH INCREASING
    CONTENTS OF CAO AND SIO IN THE INITIAL ASH AS WELL AS WITH ADDNS. OF
    NACL, NA SUB2 CO SUB3, AND MGCO SUB3 K INCREASED.

ZZZZZZZZZZZZ   UNCLASSIFIED

Acc. Nr.
AP0053765   Abstracting Service: Ref. Code
              CHEMICAL ABST.   5/10   UR0366

110955j Preparation and properties of primary α-hydroxyl-aminooximes. Volodarskii, L. B.; Tikhonov, A. Ya. (Novosi-birsk. Inst. Org. Khim., Novosibirsk, USSR). Zh. Org. Khim. 1970, 6(2), 307–10 (Russ). The reaction of PhC(:NOH)CH₂Br with PhCH:NOH (anti configuration) at −40° in alc. gave HON:CPhCH₂N(O):CHPh (I). Treatment of I with H₂NNH₁ gave HON:CPhCH₂NHOH (II) identified by ir and NMR spectroscopy. On the basis of colored complex formation with Cu, II was assigned the anti configuration of the NOH group. Analogously, the reaction of MeC(:NOH)CH₂Cl with PhCH:NOH gave HON:CMeCH₂N(O):CHPh (III), which was converted into HON:CMeCH₂NOH (IV). The reactions of II or IV with BzH gave back I or III. Heating II in acetone gave 1-hydroxy-2,2-dimethyl-4-phenyl-3-imidazoline 3-oxide. The reaction of IV with acetone gave only MeC(:NOH)CH₂N(O)C:Me₂, tautomeric with the corresponding imidazoline oxide.   CPJR

REEL/FRAME
19830828

7

USSR   UDC 547.781/.785

VOLODARSKIY, L. B., FUST, L. A., KOBRIN, V. S., Novosibirsk Institute of
Organic Chemistry of the Siberian Department of the USSR Academy of Sciences

"Synthesis and Covalent Hydration of 4H-imidazole Derivatives"

Abstract: The acylation of 1-hydroxy-2,5,5-trimethyl-4-phenyl-3-imidazoline-3
oxide (I) and subsequent heating of the acetyl derivative leads to 2,4,4-
trimethyl-5-phenyl-4H-imidazole-1 oxide (II) (L. B. Volodarskiy, et al.,
KhGS, 1241, 1972). Analogous products are obtained under the same conditions
from other 5,5-disubstituted 3-imidazoline-3 oxides. The effect of aqueous
alkalie on 4H-imidazole-1 oxides leads to cleavage of the heteroring and
the formation of α-acylaminoketone oximes. Some new derivatives of the
4H-imidazole series and their N-oxides have now been synthesized including
compounds not containing oxygen, mono and di-N-oxides; their properties have
been studied: 2,4,4-trimethyl-5-phenyl-4H-imidazole, 4H-imidazole-3 oxide
and 4H-imidazole-1,3 dioxide were synthesized from 1-hydroxy-2,5,5-tri-
methyl-4-phenyl-3-imidazoline and 3-imidazoline -3 oxide. The effect of
hydrogen chloride on these compounds and also on 2,4,4-trimethyl-5-phenyl-
-4H-imidazole-1 oxide leads to water or alcohol addition products --
1/2

USSR

VOLODARSKIY, L. B., et al., Khimiya Geterotsiklicheskikh Soyedineniy, No 9, 1972, pp 1246-1251

derivatives of 4-hydroxy-2-imidazolinium chlorides. The synthesis procedures and results are presented for the noted series of compounds, and their ultraviolet, infrared and paramagnetic resonance spectral analyses are discussed.

2/2

USSR

VOLODARSKIY, L. B., SEVAST'YANOVA, T. K., Novosibirsk Institute of Organic Chemistry, Academy of Sciences USSR, Siberian Department, and Novosibirsk State University

"Synthesis and Properties of α-Hydroxylaminoketones"

Abstract: In searching for physiologically active compounds, two α-hydroxylaminoketones were synthesized by acid hydrolysis of the oximido-group of α-hydroxylaminoketone oximes. Stable α-hydroxylaminoketone hydrochlorides were prepared by a selective N-alkylation of sodium anti-benzaldehyde oxime with α-halophenones at 0-10° and subsequent acid hydrolysis of N-2-(1-aryl-1-oxo)alkyl phenyl nitrones formed by alkylation. Free α-hydroxylaminoketone bases with a secondary or tertiary α-carbon dimerize on standing to alkyl- and aryl-substituted N,N'-dioxy-dihydropyrazines(I). An analog of (I) is obtained by neutralizing a α-hydroxylamino-ketone hydrochloride with a primary α-carbon. Compounds (I) 1/2

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USSR

yielded substituted N-oxypyrazines by reacting with acetic anhydride. N-2-(1-aryl-1-oxo)alkylphenyl- and methyl nitrones were obtained by condensation of α-hydroxylaminoketones with benzaldehyde and acetaldehyde, respectively. Melting points, elemental analysis data, and spectral characteristics of α-hydroxylaminoketones and their derivatives are tabulated.

2/2

USSR   UDC: 681.335.5

VOLODCHENKO, G. S., KOVALENKO, G. A.

"Analysis of a Four-Square Precision Multiplier Device"

Translation: A four-square precision multiplier device with high accuracy
and sensitivity is described; it is made of semiconductor elements and allows
the operation of multiplication of two independent signals to be performed.
The device is based on the principle of multiplication of the two input vol-
tages, according to which the relative duration of a pulse proportional to
one input quantity is multiplied by its amplitude, proportional to the other
input quantity. A practical circuit is presented, its operation is analyzed
theoretically, and the analytic expression for the output characteristics is
also analyzed. The device consists of a triangular current generator and pulse-
width and pulse-amplitude modulators. The circuit can be used in the area of
regulation of linear systems. Six illustrations; four biblio. refs.
1/1

USSR   UDC 615.31:547.564.47.099

VASILENKO, N. M., VOLODCHENKO, V. A., NAKONECHNYY, A. A., and SADOKHA, YE. R.,
Industrial Toxicology Laboratory, Kharkov Scientific Research Institute of
Labor Hygiene and Occupational Diseases

"Comparative Toxicological Evaluation of para-Phenetidine and Cyanoethyl-para-
Phenetidine"

Abstract: Albino rats and rabbits were used in the tests. Para-phenetidine
was injected as a 5% emulsion and cyanoethyl-p-phenetidine as a 25% suspension
in a 3% starch gel. Subacute toxicity was induced by injection of the material
into the stomach with 0.1 LD_{50} six times a week for one month. No cumulative
effects were observed. The hemoglobin content, the erythrocyte, reticulocyte,
and leukocyte content and leukocyte formula were determined. The Heinz bodies
were also calculated. At the end of the tests the animals were sacrificed
and the weight coefficient of the internal organs determined. Methemoglobin
and sulfhemoglobin contents were also determined. The high toxicity of para-
phenetidine is due to its high methemoglobin-forming activity. The introduc-
tion of the cyanoethyl group weakens this activity, but does not exclude the
1/2

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USSR

VASILENKO, N. M., et al., Farmakologiya Toksikologiya, Vol 35, No 3, May/Jun
72, pp 367-369

possibility of the combined formation of methemoglobin and cyanohemoglobin
which in its turn contributes to the inhibition of the cyano group in the
brain, preventing its transfer to the tissue and consequently blocking
respiratory cytochromoxidase.

2/2

1/2   018
UNCLASSIFIED   PROCESSING DATE-- 23OCT70
TITLE--THE EFFECT ON THE SKIN OF DISODIUM SALTS OF SULFOSUCCINIC ACID -U-

AUTHOR-(02)-VOLODCHENKO, V.A., SADOKHA, YE.R.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 5, PP 63-65

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SURFACE ACTIVE AGENT, DERMATITIS, SODIUM COMPOUND, ORGANIC
  SULFUR COMPOUND, SUCCINATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/2049   STEP NO--UR/0206/70/000/005/0063/0065

CIRC ACCESSION NO--AP0122278
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0122278
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WASHING SUBSTANCES PREPARED ON THE
  BASIS OF SURFACE ACTIVE COMPOUNDS HAVE FOUND WIDE APPLICATION IN
  INDUSTRY AND PRIVATE LIFE. AS A RULE, THEY ARE COMPLEX CHEMICAL
  COMPOSITIONS REQUIRING BIOLOGICAL EVALUATION. IN THE PRESENT WORK, THE
  EFFECT ON THE SKIN OF TWO NEW KINDS OF WASHING SUBSTANCES (DISODIUM
  SALTS OF SULFOSUCCINIC ACID), PREPARED ON THE BASE OF ALCOHOLS FROM
  SPERM WHALE FAT (DHC A) AND A MIXTURE OF THESE ALCOHOLS WITH
  ALKYLOLAMIDES OF FATTY ACIDS (DHC AK), WAS STUDIED. THE RESULTS OF THE
  STUDY INDICATED THAT DHC A AND DHC AK COULD BE USED IN THE COMPOSITIONS
  OF WASHING SUBSTANCES IN CONCENTRATIONS NOT EXCEEDING 10PERCENT.
  INCREASE OF THE CONCENTRATION OF THESE COMPONENTS IN WASHING SUBSTANCES
  UP TO 50PERCENT MAY RESULT IN DEVELOPMENT OF DERMATITIS.
  FACILITY: LABORATORIYA PRMYSHLENNOY TOKSIKOLOGII KHAR'KOVSKOGO
  INSTITUTA GIGIYENY TRUDA I PROFZABOLEVANIY.

UNCLASSIFIED

USSR

UDC 615.917:547.587

VASILENKO, N. M., VOLODCHENKO, V. A., and LABUNSKIY, V. V., Kharkov Institute of Industrial Hygiene and Occupational Diseases

"Correlation Between the Chemical Structure of Mono-, Bi-, and Trinuclear Quinones and Their Toxicity"

Abstract: There are mono-, di-, and trinuclear quinones - benzoquinones (BQ), naphthoquinones (NQ), and anthraquinones (AQ) - depending on the number of benzene rings in the molecule. AQ derivatives containing various radicals in the main nucleus are more toxic than the AQ themselves. BQ are the least toxic among the amino AQ derivatives, the diamines are more toxic than the monamines. Among the AQ sulfonic acids, the most aggressive is the disodium salt of 1,8-sulfonic acid. The presence of methoxy, ethyoxy, and amino groups and especially combinations of them in the AQ molecule are the most dangerous. Introduction into the NQ molecule of 2 atoms of chlorine (2,3-dichloro-1,4-naphtho-quinone) or 2 atoms of bromine combined with amino, hydroxy, and imino groups (5-amino-8-hydroxy-3,7-dibromo-1,4-naphthoquinonimine) mitigates the toxic and irritating effects of the compound.

1/1

USSR

UDC 669.71.472(088.8)

BALDOVSKIY, L. A., VOLODCHENKO, V. O., GRECHUKHIN, N. Y., MELIKYANTS, R. V.,
MITREYKIN, N. V., and RABINOVICH, B. V.

"Device for Sampling Melted Electrolyte"

USSR Author's Certificate No 271105, Filed 29/11/68, Published 19/08/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract
No 2 G145 P)

Translation: A device for sampling a melted electrolyte, including a
spring-mounted perforated cup with a support rod, is presented. To in-
crease the effectiveness of its operation the outer surface of the cup
is wrapped with paper and contains a concentrically mounted cylinder,
equipped with cells mounted on a spiral and fastened to the supporting
rod by a quick-change joint such as a wedge.

1/1

USSR

UDC 669.713.72

KULESH, M. K.M DIMITRIYEV, A. A., and VOLODCHENKO, V. O.

"Effect of the Height of the Electrolyte Layer on the Process of Aluminum Electrolysis "

Moscow, Tsvetnyye Metally, No 9, Sep 70, pp 23-24

Abstract: The effect of the height of the electrolyte layer on its gas content, electric resistance of the electrolyzer, and the quality of the anode has been studied. In industrial electrolyzers the height of the electrolyte layer varies from 16 to 24 cm. In some foreign plants the depth of anode penetration in the electrolyte is well below that used in Soviet plants, and the appropriate volume of the electrolyte is maintained through a greater distance from the anode to the edge of the electrolyte. This study was performed on 120 heavy-duty industrial electrolyzers. The data show that the specific gas content of the electrolyte increases with the depth of anode penetration: the wider the anode, the more intensive the changes in the gas content of the electrolyte as a function of its height above the anode base. It is shown that with an increase in the depth of anode penetration,
1/2

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USSR

KULESH, M. K., et al., Tsvetnyye Metally, No 9, Sep 70, pp 23-24

of a standard electrolyzer from 5 to 15 cm drops the voltage by
112 mv. An increase in the anode-electrolyte contact surface
through deeper penetration of its side faces in the melt may be
responsible for it.

1/2

USSR   Nuclear Physics

UDC 537.591.1

VERNOV, S. N., GRIGOROV, N. L., LIKIN, O. B., LOGACHEV, Yu, I., PISARENKO, N.F.,
SAVENKO, I. A., VOLODIChEV, N. N., and SUSLOV, A. A., Scientific Research
Institute of Nuclear Physics, Moscow State University.

"Studies of Cosmic Radiation Aboard the Prognoz Satellites"

Moscow, Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, 1973, pp 1138-1143

Abstract: Two Prognoz satellites were launched in April and June of 1972 into
orbits with the following parameters: apogee -- 200,000 kilometers, perigee --
950 kilometers, angle of inclination 65°. The satellites were launched toward
the sun, the angles between projections of the apsides and the orbit through
the plane of the ecliptic and the direction of the sun being 22 and 23
degrees, respectively. The angle between projections of the apsides of the
two satellites was 77° in July 1972. The satellites served about six months
each. Although they were in orbit during the decline in the 11-year solar
cycle, their first months of observation coincide with an anomalous increase
in solar activity. Background radiation was almost never recorded in these
months. From April through September 1972, interplanetary space was filled
with intensive streams of solar protons at energies of about 1 Mev. Higher
energy protons were observed only during the August flares. The electron flow
1/3

USSR

(4)

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, 1973, pp 1138-1143

was well correlated with the protons. Absorbed radiation dose during this interval, except for 2-7 August, was steady at approximately 24 mrad per day.
Calculations from the uniform nature of the declines in intensity of solar proton activity indicate that the absorbing layer is at a distance of approximately two astronomical units from the sun. It is remarkable that the state of interplanetary space remained the same over a long interval, in spite of substantial manifestations of solar activity; when perturbed, it recovered rapidly.

Increases in electron flow were observed several times without any corresponding increase in proton output, but every increase in proton output from the sun was accompanied by an increase in electron flow.
During intervals of low solar activity, the detectors which determined these correlations established a strong negative correlation between the counts of extra-solar protons at over 30 Mev and electrons under 500 kev.
The satellites recorded the intense solar activity of early August. An interesting phenomenon was the sharp increase in the flow of particles at all energies over the course of 2.5 hours early on 5 August. The peaks in the curves had particularly steep leading and trailing edges. It is theorized

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USSR

VERNOV, S. N., et al., Izvestiya Akademii Nauk SSSR, Fizika; Vol 37, No 6, pp 1138-1143

that this represented a magnetic "trap" with dimensions of approximately 0.1 au, traveling at approximately 2500 kilometers per second; the absence of any nucleons with $Z \geq 6$ indicates that the particles must all have been of solar origin.

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UNCLASSIFIED

TITLE--THE RIGIDITY SPECTRA OF PRIMARY COSMIC RAY NUCLEI GROUPS -U-

PROCESSING DATE--11DEC70

AUTHOR-(03)-VOLODICHEV, N.N., GRIGOROV, N.L., SAVENKO, I.A.

COUNTRY OF INFO--USSR, HUNGARY

SOURCE--INTERNATIONAL CONFERENCE ON COSMIC RAYS, 11TH, BUDAPEST, HUNGARY, AUGUST 25-SEPTEMBER 4, 1969, PROCEEDINGS. VOLUME 1 ORIGIN AND GALACTIC

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--PRIMARY COSMIC RAY, SPECTRUM, GEOMAGNETISM, NUCLEUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605061/803 STEP NO--HU/2506/70/029/000/0395/0398

CIRC ACCESSION NO--AT0144426

UNCLASSIFIED

CIRC ACCESSION NO--AT0144426   UNCLASSIFIED   PROCESSING DATE--11DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE RATIOS OF THE FLUXES OF NUCLEI GROUPS WITH CHARGES ABOVE OR EQUAL TO 1, 2, 6, AND 16 IN THE GEOMAGNETIC CUTOFF RIGIDITY RANGE FROM 3 TO 16 GV. FROM THE CONSTANCY OF THESE RATIOS WITH RIGIDITY IT IS CONCLUDED THAT THE INTEGRAL SPECTRA OF THESE GROUPS OF NUCLEI ARE SIMILAR BETWEEN 3 AND 16 GV. THE MEASURED INTENSITY OF VARIOUS NUCLEI IS NOTED TO BE TWICE AS HIGH AS THAT OBTAINED BY ONE GROUP OF AUTHORS AND COINCIDES IWTH ANOTHER GROUP OF RESULTS.   FACILITY: MOSKOVSKII GOSUDARSTVENNYI UNIVERSITET, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 541.26'.118

VOLODIN, A. A., KIREYEV, V. V., KORSHAK, V. V., and FOMIN, A. A.

"Synthesis and Investigation of Pentaarylhydroxyhydroxydialkoxyphos-phazocyclotriphosphazotrienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2206-2211

Abstract: A series of pentaarylhydroxyaminocyclotriphosphazotrienes has been synthesized and converted to respective trichlorophosphazo-compounds by Kirsonov reaction; alcoholysis of the latter gave a series of penta-arylhydroxyhydroxydialkoxyphosphazocyclotriphosphazotrienes (I). The structure of the compounds synthesized was proposed on the basis of IR and NMR ^{31}p spectral data. A correlation has been shown to exist between the pKa values of (I) in alcohol and Taft's σ^* constants of the alkyl substituents. The substituents at the phenyl ring showed no effect on the value of pKa.

1/1

USSR

VOLODIN, A. A., KIREYEV, V. V., FOMIN, A. A., YEDELEV, M. G., and KORSHAK, V. V., Corresponding Member Academy of Science USSR, Moscow, Chemico-Technological Institute imeni D. I. Mendeleev, Moscow

"Synthesis and Study of Pentaaryloxyfluorocyclotriphosphazotrienes"

Abstract: Pentaaryloxychlorocyclotriphosphazotrienes (I) with aryl groups RH_4C_6, where R = H, p-MeO, p-Me, m-MeO, m-Me, were prepared according to E. T. McBee et al., Inorg. Chem., 5, 450, 1966. By treating compounds I with potassium fluorosulfinate in O_2NPh, the corresponding nonofluoro derivatives (II) were prepared : $P_3N_3(OC_6H_4R)_5Cl + KSO_2F \rightarrow P_3N_3(OC_6H_4R)_5F + KCl + SO_2$. KSO_2F was obtained by treating KF with liquid SO_2. The physical properties of compounds II were determined (table) and their nuclear (^{31}P and ^{19}F) magnetic resonance spectra studied.

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USSR

UDC 546.185:547.245

TELKOVA, I. B., KIREYEV, V. V., KORSHAK, V. V., VOLODIN, A. A., and FOMIN, A. A.

"Synthesis and Study of Arylhydroxycyclotriphosphazotrienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43, (105), No 6, Jun 73, pp 1157-1161

Abstract: Pentaarylhydroxychlorocyclotriphosphazotrienes and hexaarylhydroxycyclotriphosphazotrienes were synthesized by the reaction of the respective sodium phenoxides with hexachlorocyclo-triphosphazotriene in acetone or tetrahydrofurane. The structures of all derivatives obtained were supported by IR, UV and NMR^{31}p spectra.

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USSR   UDC: 513.88

VOLODIN, A. A., SHMUL'YAN, Yu. L., Odessa Institute of Engineers of the
Marine Fleet

"Some Problems of Geometry in 'Equipped' Hilbert Spaces"

Abstract: The Galois connections between classes of lineals, closed with
respect to different norms, are studied in an equipped Hilbert space.
investigation is made of a class of lineals which are closed with respect
to different norms. Applications to the theory of representation of
closed operators with improper scale space are shown.

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UDC 546.185+547.245

USSR

VOLODIN, A. A., ZELENETSKIY, S. N., KIREYEV, V. V., KORSHAK, V. V.,

"Synthesis of Acid Cyclolinear Aryloxyphosphazenes"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1506-1508

Abstract: Aryloxy phosphazenes were synthesized by reacting the corresponding sodium phenoxides with 2,2'-bis(hydroxydichlorophosphazene)tetrachlorocyclotriphosphazotriene in tetrahydrofuran. The resultant products are colored amorphous solids or very viscous resins. The reaction constants of the aryloxyphosphazenes in ethyl alcohol were determined, and it was shown that the values of pK_a correlate with the induction constants for para- and meta-substituted phenyls.

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UDC 546.185+547.245

USSR

VOLODIN, A. A., KIREYEV, V. V., KORSHAK, V. V., FILIPPOV, YE. A., CHUKOVA, V. M.

"Synthesis of Cyclolinear Alkoxyphosphazenes and an Investigation of Their Reaction with Triphenylchlorosilane"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1503-1506

Abstract: Alkoxy derivatives of cyclolinear type were synthesized by alcoholysis of 2,2'-bis(trichlorophosphazene)tetrachlorocyclotriphosphanotriene in the presence of triethyl amine. The resultant alkoxyphosphazenes are yellowish liquids. The alkoxyphosphazenes react with triphenylchlorosilane when heated above 90°C with release of alkyl chloride and formation of the corresponding siloxy derivative. The reaction products from equimolecular quantities of initial reagents are brown viscous liquids which dissolve in benzene. Analysis of the conditions of the reaction and kinetic data indicate that replacement of the alkyl groups by the triphenylsilyl group takes place in the side chain.
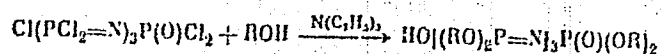
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USSR

UDC 547.26'118

VOLODIN, A. A., KIREYEV, V. V., KORSHAK, V. V., and FILIPPOV, Ye. A.

"Synthesis and Investigation of Alkoxytriphosphazophosphonyls"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 510-514

Abstract: The authors synthesized and studied alkoxy derivatives of the following member of the homologous series of linear alkoxyphosphazines -- $HO[P(OR)_2=N]_nP(O)(OR)_2$ (n = 1 and 2). The compounds were synthesized by alcoholysis of heptachlorotriphosphazodichlorophosphonyl in the presence of triethylamine.

$$Cl(PCl_2=N)_3P(O)Cl_2 + ROH \xrightarrow{N(C_2H_5)_3} HO[(RO)_2P=N]_3P(O)(OR)_2$$

The resultant alkoxytriphosphazophosphonyls are brown viscous oils with a faint odor. Some of the physical and chemical properties of the compounds are tabulated. A study of the kinetics of the reaction between alkoxytriphosphazophosphonyls and triphenylchlorosilane shows that the reaction mechanism is close to that previously proposed for imidodiphosphoric acid and alkoxydiphosphazophosphonyls, and includes a stage of ionization of the P-O-C bond with formation of a carbonium ion which attacks the chlorosilane molecule. One table, two figures, bibliography of four titles.
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USSR

UDC 911.3.616.986.7(470.313)

LITVINOVA, Z. I., VOLODIN, A. A., and SADOVNIKOVA, R. N.

"Leptospirosis Epidemiology in Ryazanskaya Oblast"

Nauch. tr. Ryazansk. med. in-t (Scientific Works of Ryazan Medical Institute), 37, 1970, pp 81-85 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.116)

Translation: Cases of this disease in humans are seen almost every year (data survey from 1949), with periodic peaks after 3-5 years. The etiological structure of the disease in humans as well as in cattle is dominated by the serotypes L. grippotyphosa and L. pomona. Natural foci are associated with forest zones, while anthropurgic foci are associated with forest steppe.

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